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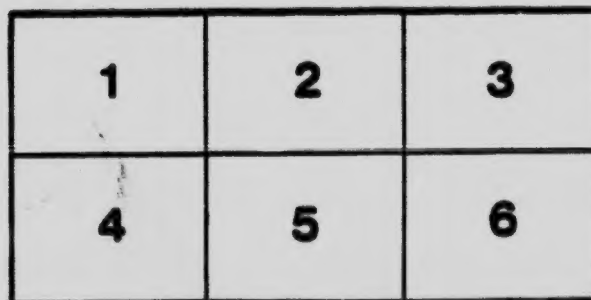
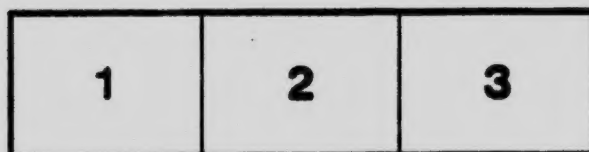
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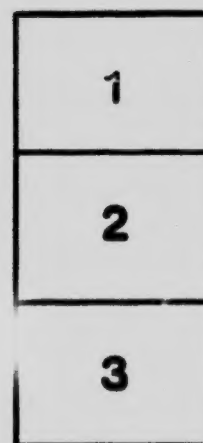
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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

ALFALFA GROWING

IN THE
VANCOUVER ISLAND DISTRICTS

By L. STEVENSON, B.S.A., M.S.,
Superintendent Experimental Station for Vancouver Island.

Circular No. 18.

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920.

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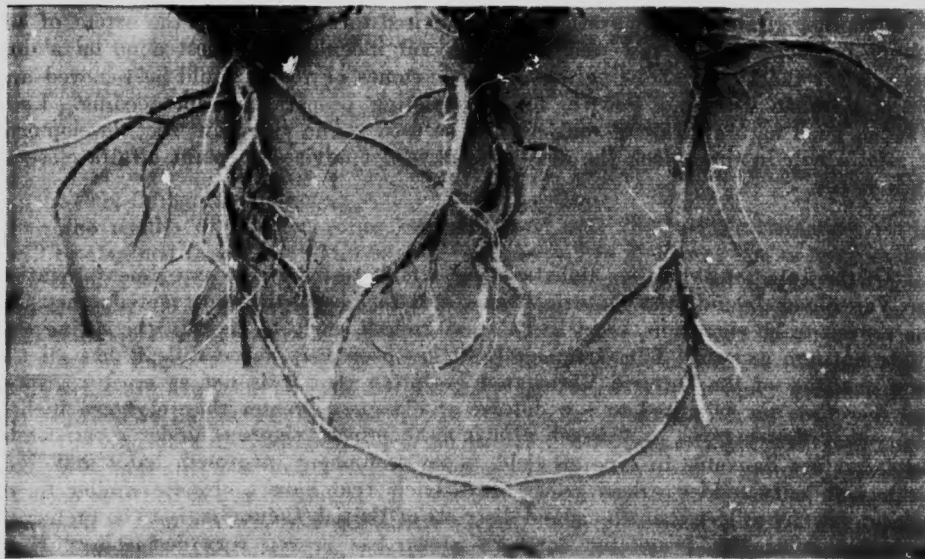
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ALFALFA GROWING IN THE ISLAND DISTRICTS

Alfalfa can be successfully grown in the island districts of British Columbia. Failures have followed neglect or faulty practice, success has always followed the approved methods applicable to the island districts. Weed grasses and the very limited rainfall during the summer period are the factors that have held the development of alfalfa growing in check. Failure to obtain good stands of alfalfa from the practice of scattering seed on the land in the early spring, spread an impression abroad that alfalfa did not do well on the islands. Experiments at the experimental station for Vancouver Island indicate that all who are capable of labour and good management, may succeed to the extent of three to five tons of dry hay per acre each year.

FEEDING VALUE.

Valued from the standpoint of animal nutrition, alfalfa has but few rivals among the forage plants. Compared with oat hay, one of the most common forages, which contains approximately 535 pounds of digestible nutrients per ton, alfalfa holds its own with 1,035 pounds. Compared with red clover, alfalfa contains 100 pounds more digestible protein per ton. The only rival among the coarse fodders that alfalfa has is the common or spring vetch. There is no question about the palatability of alfalfa, all animals are fond of it, pigs, chickens, cattle and horses.



Root development in soils that become very hard during July and August.

VALUE AS A SOIL IMPROVER.

The early-growing habit of the alfalfa plant and its ability to develop a wonderfully strong root system, make it especially valuable as a soil improvement crop. The early spring growth enables extensive root activity in the season when the island hard-pan subsoils are most easily penetrated. Alfalfa will, through its early-growing

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habit, gradually deepen the plant food-producing soil layer, and also the moisture reserve area. The humus and nitrogen content of the soil layer penetrated by the roots is also greatly increased by the vigorous root development and associated nitrogen gathering bacteria. The amount of nitrogen brought to the soil from the atmosphere together with the phosphorus and potash brought from the lower subsoils to the surface layer are sufficient to make alfalfa growing worth while if considered as a soil improvement crop only.

PREPARING THE SOIL FOR ALFALFA.

The successful alfalfa grower believes in planting on a deep, fertile, naturally well drained soil, that is abundantly sweet; he believes in lime applications, in supplying inoculating bacteria, in row seeding and tillage. It is very easy to establish alfalfa on a deep soil that gives root room, plant food, moisture and air. On soils that are not very hospitable to plant life, good stands have been established by persistent effort and care. The range of soil on which alfalfa will flourish is very wide, but favourable conditions for bacterial life of the aerobic class are of the greatest importance. Any land that is too wet or otherwise unsuited to the growth of common red clover should not be used for alfalfa. Select land on which you know red clover would do well; if it is not in good condition, prepare it by growing some cultivated crop like potatoes or mangels for one or two seasons. The land will be cleaned in this way and the soil improved in tilth. Plough deeply in the autumn, apply lime to the rough ploughed surface if needed, and harrow in. An application of 2,000 pounds of lime per acre is generally sufficient for the first five years. In the spring, as soon as the land is dry enough to support a team, the land should be thoroughly cultivated and then left for a few days until the surface is dry enough to harrow well. If soil from another alfalfa field is available, it is advised to apply such to the extent of 300 pounds per acre and harrow well in. This soil inoculation is best done on a dull day. After thorough harrowing, any rubbish, stones or roots should be removed and the land rolled firm and smooth, thus completing preparations for seeding. Land that has good natural drainage only should be used. The vigorous root development of alfalfa will in time block the drains, so it is not advised to plant alfalfa close to lines of tile.

THE SEED.

Of the numerous varieties and strains of alfalfa tested at the experimental station for Vancouver Island, the Ontario Variegated has been the most satisfactory. It has proven to be vigorous, erect in habit of growth, early to start in the spring and a late autumn grower. The Grimm alfalfa has been very successful; it has all the good qualities of the Ontario Variegated excepting that it is not as erect a grower and therefore not as suited to row culture at distances greater than eight inches. The yellow flower types or Cossack alfalfa have proven vigorous under coast conditions, but not desirable in type or yield, being recumbent in growth habit and light yielders of leafy fodder. Seed grown in districts that have a climate similar to, or at least not any milder than the island districts of British Columbia, is to be preferred. Seed that is usually designated northern grown has proven very desirable. High grade, plump seed only should be used. The Weed Control Act protects the alfalfa seed purchaser against weeds excepting the Russian thistle. Seed purchasers are warned against this weed. Alfalfa seed that has been scratched or scarified, either during or after the process of threshing, will germinate more readily than seed with an unscratched seed coat. When the seeding of a small or large area is contemplated it is advisable to make sure that the hard seed coat is in condition for moisture to penetrate and start germination after planting. Small quantities of seed can be scarified by using a wooden bucket that is lined with sandpaper, putting the seed in such and stirring vigorously for ten minutes with a spoon or stick, the end of which

is also covered with sand or emery paper. This is often not necessary but it is an insurance of success. If the soil does not contain alfalfa bacteria, then it is necessary to treat the seed with the prepared alfalfa culture that is obtainable from the Division of Botany, Central Experimental Farm, or to treat with soil from an old alfalfa field. If the prepared culture is used, it can be applied to the seed by first mixing with a small quantity of skim milk, then stirring through the seed in sufficient quantity to moisten it. Sow at once or let dry in the dark.

If soil is used in inoculating the alfalfa seed a quantity of silty soil should be secured and dried sufficiently under cover of darkness until it can be easily sifted free of coarse particles. One quart of soil is sufficient for ten pounds of seed. Mix the seed and dry soil thoroughly, then stir in just sufficient glue water to cause the soil to adhere to the alfalfa seed. The seed may be sown at once or spread out to dry in a darkened room. Remember, bright sunlight will destroy the bacteria.

SEEDING.

The sowing of alfalfa seed under the same methods as are used in securing a stand of timothy or clover has not been successful on Vancouver Island and is not advised. The seeding in rows at distances apart to permit tillage has been very successful and is recommended. At the Experimental Station for Vancouver Island various distances have been tested with the following results.

Average yearly yield of hay per acre:

Rows 12 inches apart.—Yield 8,465 pounds. Quality excellent, stems fine, erect and easy to cut.

Rows 18 inches apart.—Yield 8,694 pounds. Quality excellent, stems fine, erect and easy to cut.

Rows 24 inches apart.—Yield 9,347 pounds. Quality excellent, stems a little coarser than 12 and 18-inch planting, erect and easy to cut.

Rows 30 inches apart.—Yield 10,471 pounds. Quality excellent, recumbent in growth, difficult to cut, hay not so fine as that of the close seeding, foliage abundant.

Rows 36 inches apart.—Yield 8,155 pounds. Quality, first cut coarse, second cut excellent, difficult to cut with mower.

Mass seeding, 48-inch strips.—Yield 8,378 pounds. Quality excellent, erect, stems fine, foliage abundant.

The results of the foregoing tests indicate that the most satisfactory returns will be obtained from the 18 and 24-inch seedings. The yield was not as large as from the 30-inch seeding, but the quality of the hay was superior, and the harvesting was much easier. The distance apart for the rows are therefore recommended to be not less than eighteen inches or more than twenty-four inches. Alfalfa seed may be sown in rows by hand, using a line, or with an ordinary root seed seeder. Special alfalfa seed drills are available and are advised for large areas. An ordinary grain drill can be adjusted to handle alfalfa seed in row seeding successfully. It is very important that the seed be well covered and pressed in firmly. If properly planted, germination should be well advanced and a large percentage of the plants above ground in ten days. A deep seed bed is not desirable. A firm and pulverized surface, one or three inches deep, on a firm bottom, will germinate alfalfa seed more satisfactorily than a loose open seed bed. If the seed is not pressed in firmly, germination will be slow and uneven. On southern Vancouver Island the first week in May is the most desirable seeding period for alfalfa. Five pounds of seed is enough for one acre.

FIELD MANAGEMENT.

Tillage during the first season to destroy the weeds that compete with the young alfalfa plants is imperative. The young alfalfa plant is a weakling, but when once established on roots that are noted for toughness and size it will stand almost any conditions better than any other fodder plant. After the alfalfa field is established, one thorough cultivation each season, preferably immediately after the first crop has been

cut and removed, is generally sufficient. This is best done with an ordinary spring tooth harrow drawn across the rows to tear out any grass or weeds. After cultivating, any stones or rubbish should be gathered and the area rolled. Injury to the alfalfa plant is not likely to occur through tillage. The green crop should be cut for hay or green forage, either immediately before, or as soon as the new shoots start growth. This is generally when the first blossoms appear. If left until the new shoots have grown more than two inches, injury may result and the following crop be reduced. The average dates of alfalfa cutting at the experimental station have been May 21, July 9 and August 24. Cutting after September 15 is not advised. Any green top that may have developed as a fourth crop should remain uncut for winter protection. The lime requirement of alfalfa is large, and must be kept up by applications of



Alfalfa seed sown in May, photo taken in September of the same year. Experimental Station.

ground limestone or air-slacked lime at intervals sufficiently frequent to keep up the vigour of the plant. One thousand pounds per acre of air-slacked lime every third year is generally sufficient for island soils. Top-dressing of alfalfa areas with the various stable manures is a good practice. This is best done after the third cutting of the season has been taken off. Horses and sheep should not be permitted to graze on alfalfa at any time, unless it is desired to destroy the stand. Cattle and swine can be successfully grazed if reasonable judgment is used in limiting the number of animals to the producing capacity of the tract. Care should be taken to prevent overgrazing. The repeated nibbling off of the newly-formed buds will quickly kill alfalfa. It is not advisable to permit an alfalfa area to produce a seed crop more frequently than alternate years. Favourable weather conditions at the time of alfalfa haying are the most important factor in making good hay. In the humid coast air it is generally advisable to leave the hay in swath for two days, then rake into

windrows and leave for a day before setting up in small cocks. After setting up in cocks it is advisable to cover with hay caps and to cure under these. The curing under hay caps is slow, but it is a guarantee of good hay at a minimum expenditure of labour. Alfalfa hay should not be raked into windrow, cocked or stacked while moist from either dew or rain.

PRODUCTION OF SEED.

Seed of excellent quality has been produced, and excellent yields obtained, at the Experimental Station for Vancouver Island. The humid atmosphere and relatively low temperatures during September and October do not favour seed production from the second growth of the season, and only light yields of inferior seed can be expected from such in the island districts. The first growth will, if left, produce abundantly an excellent quality of seed. Row seeding at distances of eighteen and twenty-four inches gives a more uniform ripening than the wider distances of thirty and thirty-six inches. The seed crop has been as heavy under the wider rows, but there is tendency toward an all too abundant second growth, and harvesting difficulties develop through the presence of new growth and tangled recumbent plants. With the narrower rows the plants stand up better and the harvest is made much easier. Ripe and green seed pods, and frequently bloom, may be on the same seed plant. The alfalfa crop does not ripen uniformly, and therefore must be harvested when indications are for the saving of the largest quantity of seed. When two-thirds of the seed pods have turned brown, it is advised to harvest the crop. This stage of ripeness is generally reached about August 15 on Vancouver Island. The harvesting is best done with a mower that is fitted with a bunching attachment. A binder or reaper can be used if the crop is standing erect. After cutting, the seed crop is put up in small cocks and covered with hay caps. Threshing is best done with a clover huller during dry weather. If no clover huller is at hand, the threshing can be done with an ordinary grain thresher, providing some adjustments are made and the material put through the machine several times.

ENEMIES.

All weeds that compete with the alfalfa plant for moisture and plant food are undesirable. By using well prepared, clean, weed-free soil for alfalfa growing and practising rational tillage, the weed enemy will not be serious unless dodder is introduced at the time of seeding. Dodder is a parasitic plant, capable of quickly destroying alfalfa or red clover. If small patches appear of this twining, leafless, threadlike parasite, cut and burn at once.

Leaf spot is a fungus which attacks the leaves, causing them to turn yellow and fall. If present, cut the crop and remove at once to other land for curing. The hay will be useful for feed, but it is desirable that the infection be removed from the area so that the next crop will not be affected.

CONCLUSION.

The demand for alfalfa hay and meal and the high prices paid for such are an indication of the value of this crop to island farmers and poultry keepers. The ability to grow alfalfa successfully has been fully demonstrated by the Experimental Station. Failures of the past have been caused by improper methods of seeding and neglect of the factors which make alfalfa a success, viz., a naturally well-drained soil, lime, inoculation, row seeding and tillage. An alfalfa field will last, if properly established and managed, for a period as long as a man is actively useful on a farm. Why plough and pick up stones every year? Get it to something permanent, a crop that will withstand the dry summers and give a good return. Try a few rows and gain a first-hand acquaintance with one of the best fodder plants that is not as extensively grown as its usefulness warrants on Vancouver and adjacent islands of the Pacific.